

SHARP SERVICE MANUAL

CODE: 00ZARPB8//A1E

DIGITAL COPIER OPTION PRINTER EXPANSION KIT

MODEL AR-PB8

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Parts marked with “⚠” is important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

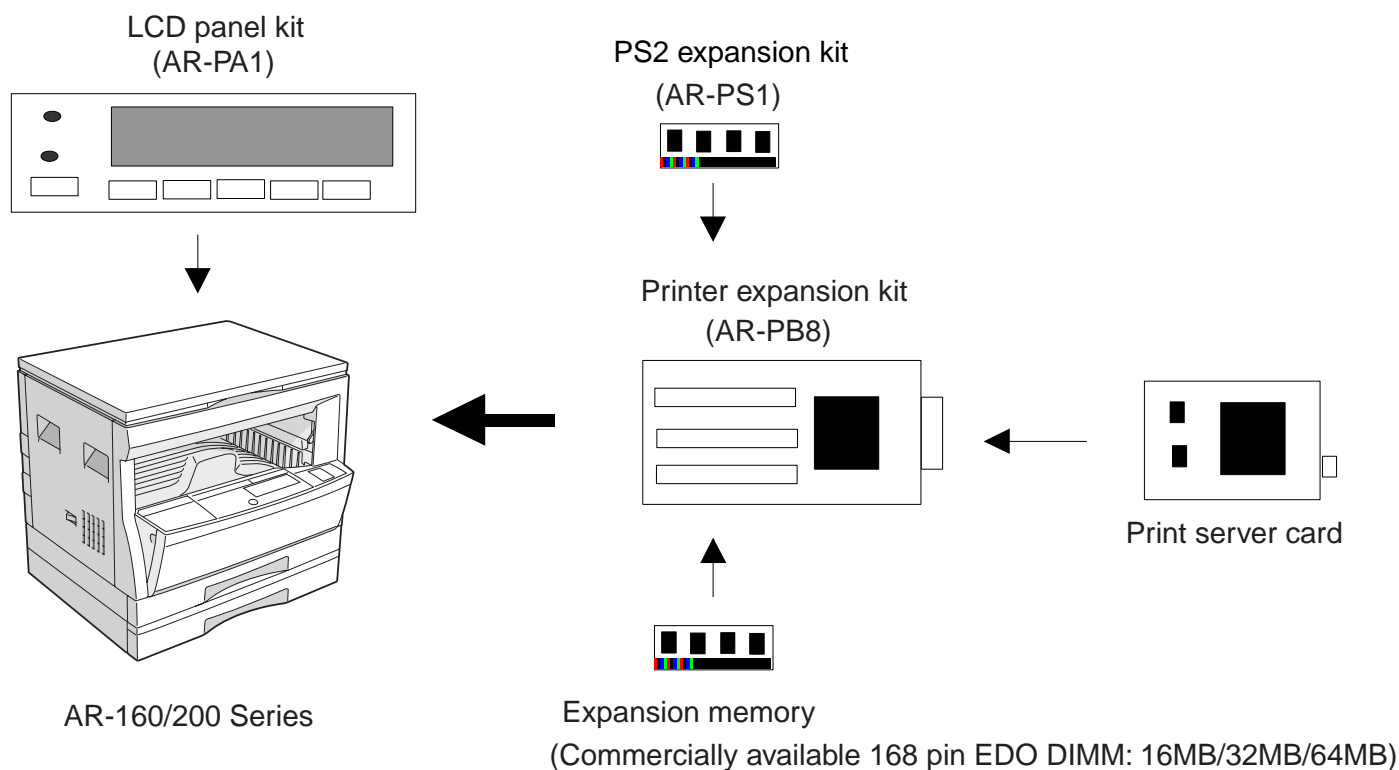
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Note for descriptions

The marks of *A and *B used in this Service Manual indicate that the marked functions are not supported as of February 1999.

[1] SYSTEM CONFIGURATION



[2] SPECIFICATIONS

1. Basic specifications

Item	Contents		
Print speed	16 PPM (16cpm machine) 20 PPM (20cpm machine)		
First print	7.2 sec		
Resolution	600 dpi, 300 dpi (1,200 dpi equivalent by smoothing)		
Toner save	Available		
Duplex print	Available (Only in the model with duplex function)		
Paper feed tray	Multi bypass tray Tray 1, Tray 2, Tray 3, Tray 4 (Depends on the machine and the option installation.)		
Paper size	Multi bypass tray		A3, B4, A4R, B5R, A5R, 11" × 17", 8.5" × 14", 8.5" × 11"R, 8.5" × 5.5"R, 8.5" × 13", 8.3" × 13", 7.25" × 10.5"R, DL, C5, COM10
	Tray 1 ~ 4*	AB series	A3, B4, A4, A4R, B5, B5R, A5

* The number of trays supported depends on each model.

Item	Contents		
Paper size	Tray 1 ~ 4*	Inch series	11" × 17", 8.5" × 14", 8.5" × 11", 8.5" × 11"R, 8.5" × 5.5", 8.5" × 13"
Paper exit	Face down system		
Shifter	Available (only in the model with the shifter)		
Page description language (standard)	PCL6 emulation PCL5e emulation		
Dot emulation	None		
Page protection function	Available		
Interface	IEEE1284 port	Compatibility mode Nibble mode	
	Expansion slot	Expansion slot for Print Server Card × 1	
Interface cable	Use IEEE1284 conforming parallel cable. (shielded and grounded)		
	Max. length		Within 3.0 m

Item	Contents	
Interface select	Auto	
Emulation select	Auto	
Plug and play	Conforming (only with Windows 95/98)	
Printer driver	Microsoft Windows 3.1	○ *A
	Microsoft Windows 95	○
	Microsoft Windows 98	○
	Microsoft Windows NT4.0	○
	Macintosh OS (System 7.5 or later)	— *A
Network control software	Sharp Admin Software	
Built-in fonts	Outline Western language 31 fonts (PCL6 compatible)	
Screen font	Outline European language 45 fonts (PCL6 compatible) for Windows Outline European language 35 fonts (PS2 compatible) for Windows*A	
Memory	Standard	8MB
	Max.	136MB
	Expansion slot	DIMM slot × 2
	Expansion memory (For details, refer to the descriptions below.)	64MB, 32MB, 16MB (Commercially available 168 pin EDO DIMM used)
Conforming PC	IBM PC-AT compatible Apple Macintosh and compatible (AR-PS1 required)*A	

2. Printer driver specifications

A. System

	OS	PCL <AR-PB8>	PS2 <AR-PS1>
IBM PC/AT	Microsoft Windows 3.1	○ *A	△ *A
	Microsoft Windows 95	○	△ *A
	Microsoft Windows 98	○	△ *A
	Microsoft Windows NT4.0	○	△ *A
Macintosh	Macintosh OS (System 7.5 or later)	×	△ *A

△ : Option

B. Kinds of printer drivers

Printer driver name	Name on PC screen
PCL5e for Windows 3.1*A/95/98	SHARP AR-160/200 Series PCL5e
PCL5e for Windows NT4.0	
PCL6 for Windows 3.1*A/95/98	SHARP AR-160/200 Series PCL6
PCL6 (PCL XL) or SPDL2 for Windows NT4.0	
PostScript Level2 for Windows 3.1/95/98*A	SHARP AR-160/200 Series PS2 (AR-PS1)
PostScript Level2 for Windows NT4.0*A	
PostScript Level2 for Macintosh OS*A	

C. Set content

Item	PCL6	PCL5e
Copies	1 to 999	
Orientation	Portrait, Landscape	
Document Style	1-Sided, 2-Sided(Book), 2-Sided(Tablet)*B	
Paper Source	Auto, Tray 1, Tray 2, Tray 3, Tray 4, Bypass Tray	
Paper Size	A3 (297 × 420 mm), B4 (257 × 364 mm), A4 (210 × 297 mm), A5 (148 × 210 mm), B5 (182 × 257 mm), Ledger (11" × 17"), Letter (8.5" × 11"), Legal (8.5" × 14"), Executive (7.25" × 10.5"), Folio (8.3" × 13"), Invoice (5.5" × 8.5"), Foolscap (8.5" × 13"), DL, C5, COM10, Custom Paper	
N-Up Printing	1-Up, 2-Up, 4-Up	
Border	On, Off	
Fit to Page	On, Off	
Page Protection	On, Off	
Toner Save Mode	On, Off	
Smoothing	On, Off	
Resolution Settings	600 dpi, 300 dpi	
Graphics Mode	HP-GL/2 (Vector), Raster	
Half Tone	Photo Images, Line Art, Scanned Images	
Font Source	Resident Fonts, Download Fonts	
True Type Mode	Download as True Type, Download as bitmap font, Print as graphics	
Duplex Capability	Yes, No	
Input Tray	One Tray, Two Trays, Three Trays, Four Trays	
Installed RAM	8MB, 24MB, 40MB, 56MB, 72MB, 88MB, 104MB, 136MB	
Set content of custom paper	Unit	0.01", 0.1 mm
	Width	1000 to 2969 (In the case of 0.1 mm) 394 to 1169 (In the case of 0.01")
	Length	1480 to 4318 (In the case of 0.1 mm) 583 to 1700 (In the case of 0.01")
Set content of water mark	Position	Depends on the paper size. MAX Short -5.84" ~ 5.84" Long -8.5" ~ 8.5"
	Size	6 ~ 900
	Angle	±90°
	Text	TOP SECRET CONFIDENTIAL DRAFT ORIGINAL COPY
	Edit Fonts	Refer to the following Font List.
	Edit Density	0 ~ 255
	Transparent Text	Yes, No
	On First Page Only	Yes, No
	As Outline Only	Yes, No (Only when Transparent Text is OFF.)

D. Option

(1) LCD kit

AR-PA1	Key	6 pcs. (LINE, MENU, ITEM, ←, →, ENTER)
	Lamp	2 (DATA, ONLINE)
	Display	20 digits × 2 lines

* When installing the AR-PB8 to a model which is not equipped with the LCD panel, the LCD kit (AR-PA1) must be installed to.

a. LCD message

Status	LCD display		Content
Online	Online	AUTO	Auto select to emulation
		PCL	PCL
		PS2*A	PS2*A
		HEX	HEX
Error	Data Loss Error	Press ENTER	
	Memory Full	Press ENTER	
	Paper Out	Tray 1 <Paper Size>	When the paper feed tray is selected to other than AUTO.
		Tray 2 <Paper Size>	
		Tray 3 <Paper Size>	
		Tray 4 <Paper Size>	
		Bypass <Paper Size>	
		Tray <Paper Size>	When the paper feed tray is selected to AUTO.
	Check Panel		Toner empty Drum replacement Cover open Service call error
	Clear Paper Path		Paper jam Paper exit tray full
User setting	Main Menu	Copies	Printing of the set quantity is made.
		Resolution	Printing at the set resolution is made.
		Smoothing	Smoothing function setting.
		Toner Save	Toner save mode setting
		Page Protection	Setting of page protection function
		2-Sided Printing*B	Setting of duplex function and binding direction
		Paper Source	Tray select
		Paper Size	Paper size select
	Network Menu *1	Orientation	Setting of print direction
		Emulation	Emulation setting
		Set IP Address	IP address setting is made.
		Set Subnet Mask	Subnet Mask setting is made.
		Set Default Gateway	Default Gateway setting is made.

Status	LCD display		Content
User setting	Network Menu *1	Enable TCP/IP	Enable/Disable TCP/IP
		Enable Netware	Enable/Disable Netware
		Enable EtherTalk	Enable/Disable EtherTalk
		Reset to Defaults	Reset Print Server Card to default
	PS2 Menu *2, *A	Print PS2 Error	Setting of printing in case of PS Error
	Interface Menu	I/O Time Out	If data reception is not completed within the set time, it is judged as a time out error.
		Configuration Page	Configuration page is printed.
	Test Printing Menu	PCL6 Font Page	PCL6 Font page is printed.
		PS2 Font Page	PS2 Font page is printed*A.

*1 When installing the network Interface card.

*2 When installing the AR-PS1.

b. LED display

ON LINE light	Extinguished	Indicates that the printer is off-line and data cannot be transferred or printed. Make settings from the operation panel in this mode. Note, however, that you cannot make settings if the "Data Remaining" message is displayed.
	Lit	Indicates that the printer is on-line and data can be transferred and printed.
DATA light	Extinguished	Indicates that there is no data being received or processed.
	Lit	Indicates that the printer is receiving or processing print data.
	Blinking	Indicates that there is print data remaining in memory that has not yet been printed.

c. Operation keys

LINE key	Changes between the on-line and off-line modes. When the printer is on-line, it can receive data from the computer with which it is connected. When the printer is off-line, you can use operation panel keys to make print settings. Note, however, that you cannot make settings if the "Data Remaining" message is displayed.
MENU key	Used to show setting menus on the display in sequence.*
ITEM key	Used to show the setting items of the selected menu in sequence.*
Left arrow key Right arrow key	Used to change the value of any item.*
ENTER key	Used to enter a new value.

* Invalid when the printer is on-line.

(2) Network board

10/100 Base TX	TCP/IP, IPX/SPX, Ether Talk, Jet Admin*A
10 Base 2/T	TCP/IP, IPX/SPX, Ether Talk, Jet Admin*A

(3) PS kit*A

Model name	AR-PS1	
Page description language	PostScript level 2 emulation	
Built-in fonts	Outline European 35 fonts (PS2 compatible)	
Screen fonts	Outline European 35 fonts (PS2 compatible) for Windows	
Printer driver	Microsoft Windows 3.1	<input type="radio"/>
	Microsoft Windows 95	<input type="radio"/>
	Microsoft Windows 98	<input type="radio"/>
	Microsoft Windows NT4.0	<input type="radio"/>
	Macintosh OS (System 7.5 or later)	<input type="radio"/>

E. Expansion memory

Type	DIMM (60ns/EDO/168pin) (Use commercially available one.)		
Capacity	64MB, 32MB, 16MB		
Recommendable product	Vendor	Capacity	Model name
	Viking Components	16MB	VE2641U2EN3-60
		32MB	VE4641U4EN3-60
		64MB	VE8641U4EN3-60
	Kingston	16MB	KTA4400/16
		32MB	KTM4X64VN42-60EG
		64MB	KTM8X64VN84-60EG
	Simple Technology	16MB	STI642004UD1-60VG
		64MB	STI648104UD1-60VG
	Transcend	16MB	TS2MLE64V6PN
		32MB	TS4MLE64V6TN
		32MB	TS4MLE64V6UN
		64MB	TS8MLE64V6VN

F. PC environment

Computer Type	IBM PC/AT or compatible computer equipped with a bi-directional parallel interface and CD-ROM drive
Operating System	Windows 95, Windows 98, Windows NT4.0
CPU	Windows 95 : 486SX or better Windows 98 : 486DX/66MHz or better (Pentium or better is recommended.) Windows NT4.0 : 486/25MHz or better
RAM	Windows 95 : 8MB or more (12MB or more is recommended.) Windows 98 : 16MB or more (32MB or more is recommended.) Windows NT4.0 : 16MB or more

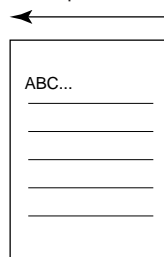
G. Paper handling specifications**(1) Paper feed direction**

a. Paper size and image transport direction

Paper Size	Side set to the paper feed port
A3	Short side
B4	Short side
A4	Long side
A4R	Short side
B5	Long side
B5R	Short side
A5	Long side
A5R	Short side
Ledger	Short side
Legal	Short side
Letter	Long side
LetterR	Short side
Invoice	Long side
InvoiceR	Short side
Foolscap	Short side
Folio	Short side
Executive	Short side
COM-10	Short side
C5	Short side
DL	Short side

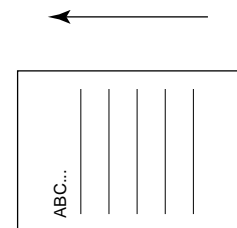
Side set to the paper feed port = Long side

Transport direction



Side set to the paper feed port = Short side

Transport direction



For paper feed of the multi bypass tray, the short side must be set to the paper feed port regardless of paper size for making print data.

(2) Paper feed port

Tray kind	Bypass Tray	Tray 1	Tray 2	Tray 3	Tray 4
Capacity	100 sheets	250 sheets	250 sheets	250 sheets	250 sheets
A3	○	○	○	○	○
B4	○	○	○	○	○
A4		○	○	○	○
A4R	○	○	○	○	○
B5		○	○	○	○
B5R	○	○	○	○	○
A5		○	○	○	○
A5R	○				
Ledger	○	○	○	○	○
Legal	○	○	○	○	○
Letter		○	○	○	○
LetterR	○	○	○	○	○
Invoice		○	○	○	○
InvoiceR	○				
Foolscap	○	○	○	○	○
Folio	○				
Executive	○				
COM-10	○				
C5	○				
DL	○				
Custom	○				

* The number of trays supported depends on each model.

* When printing with the multi bypass tray, the printer board cannot recognize the set paper direction, and therefore it regards that the short side of paper would be set (vertical transport direction) to make data.

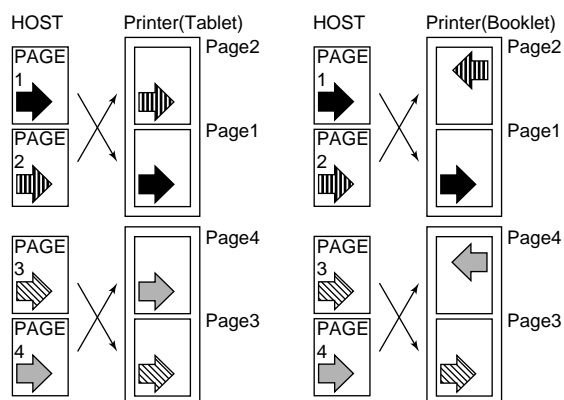
(3) Tray selection

Paper handling is controlled on the copier side. The printer board sends the Video I/F command to the digital copier according to the computer direction of the tray.

(4) Duplex print operation*B

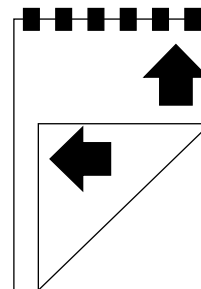
The basic operation of duplex is described below.

Paper exit is made in face down. After printing an even number page, the former odd number page is printed.



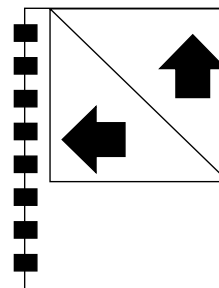
a. Tablet operation

Tablet means printing so that each page is aligned to be read properly when binding the short edge of paper. Therefore, the front page (odd number page) and the back page (even number page) are in upside down each other. This reversion is mechanically made, and the printer software needs no additional process.



b. Booklet operation

Booklet means printing so that each page is aligned to be read properly when binding the long edge of paper. Therefore, the front page (odd number page) and the back page (even number page) are in the same direction. This paper is reversed mechanically, and the printer software needs to rotate the paper 180 degrees.

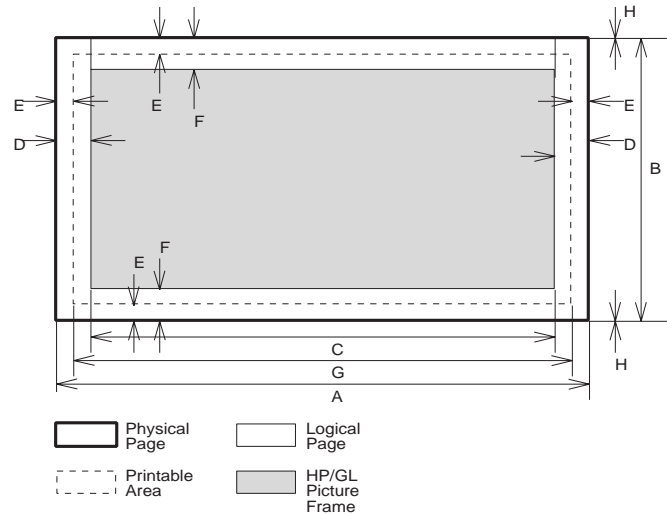
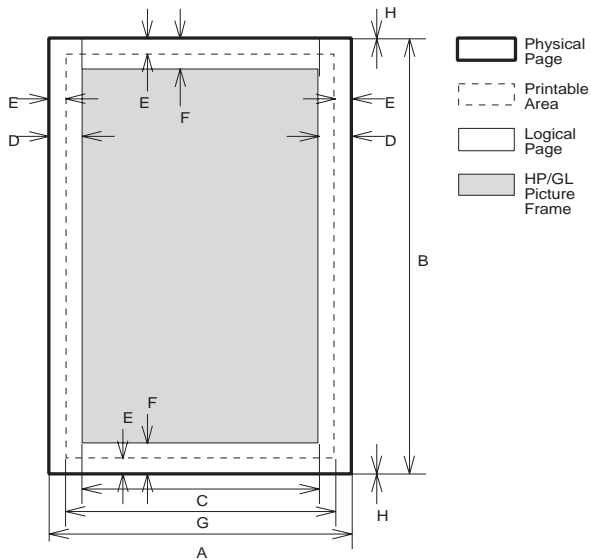


Duplex transport availability by paper size

Paper size	Duplex
A3	○
B4	○
A4R	○
B5	○
B5R	○
A5	○
A5R	×
Ledger	○
Legal	○
Letter	○
LetterR	○
Invoice	○
InvoiceR	×
Foolscap	○
Folio	○
Executive	○
COM-10	×
C5	×
DL	×
Custom	×

- Note:
1. Since duplex printing cannot be made for the special paper (Custom) and Invoice, the computer's direction of Custom or Duplex printing is ignored and simplex printing is made.
 2. Since duplex printing cannot be made in the case of paper feed from the multi bypass tray, the computer's direction to the multi bypass tray to make duplex printing is ignored and simplex printing is made.
 3. Since printing order differs in simplex printing and duplex printing, the insert surface differs in simplex and duplex in the case where there is a difference between the front and the back, for example, the letter head.

H. Print Area



Paper size	A	B	C	D	E	F	G	H
A3	7014	9920	6730	142	100	300	6814	0
B4	6070	8597	5786	142	100	300	5870	0
A4	4960	7014	4676	142	100	300	4760	0
B5	4298	6070	5770	142	100	300	4098	0
A5	3508	4960	3224	142	100	300	3308	0
Ledger	6600	10200	6300	150	100	300	6400	0
Legal	5100	8400	4800	150	100	300	4900	0
Letter	5100	6600	4800	150	100	300	4900	0
Invoice	3300	5100	3000	150	100	300	3100	0
Foolscap	5100	7800	4800	150	100	300	4900	0
Folio	4980	7800	4680	150	100	300	4780	0
Executive	4350	6300	4050	150	100	300	4150	0
COM-10	2474	5700	2174	150	100	300	2274	0
C5	3826	5408	3542	142	100	300	3626	0
DL	2598	5196	2314	142	100	300	2398	0

(Unit: Dots/600DPI)

PAPER SIZE	A	B	C	D	E	F	G	H
A3	9920	7014	9684	118	100	300	9720	0
B4	8597	6070	8361	118	100	300	8397	0
A4	7014	4960	6778	118	100	300	6814	0
B5	6070	4298	5830	118	100	300	5870	0
A5	4960	3508	4720	118	100	300	4760	0
Ledger	8400	5100	8160	120	100	300	8200	0
Legal	8400	5100	8160	120	100	300	8200	0
Letter	6600	5100	6360	120	100	300	6400	0
Invoice	5100	3300	2860	120	100	300	4900	0
Foolscap	7800	5100	7560	120	100	300	7600	0
Folio	7800	4980	7560	120	100	300	7600	0
Executive	6300	4350	6060	120	100	300	6100	0
COM-10	5700	2474	3460	120	100	300	5500	0
C5	5408	3826	5172	118	100	300	5208	0
DL	5196	2598	4960	118	100	300	4996	0

(Unit: Dots/600DPI)

* Top Margin

The set value is received from the digital copier and data are made according to the set value.

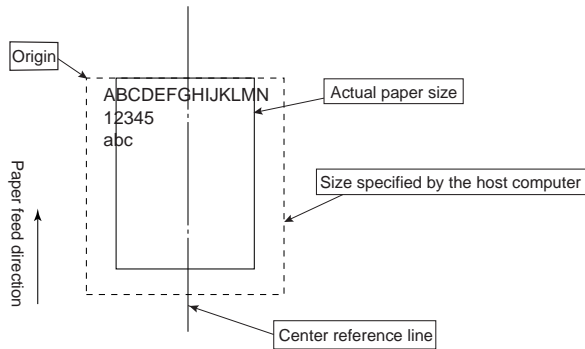
* Left margin

Since the paper size sensor is not set, the digital copier does not know the size and direction of paper inserted. Therefore, the left margin is set according to the paper size indicated by the print data sent from the computer, and printing is made. If the computer does not specify the paper size or in the case of custom size, the left margin is set according to the default paper size.

I. Print reference

This machine employs the center reference system.

Since the digital copier is not equipped with the paper size detection, format is made not by the actual paper size but by the paper size specified by the computer, and center distribution is made.



J. Font

(1) For PCL

TrueDoc Format 45 fonts

1 bitmap font

Font No.	Font Name
0	Fixed Pitch 810 Courier Roman SWC
1	Dutch™ 801 SWC
2	Dutch 801 Bold SWC
3	Dutch 801 Italic SWC
4	Dutch 801 Bold Italic SWC
5	Zapf Humanist 601 SWC
6	Zapf Humanist 601 Bold SWC
7	Zapf Humanist 601 Italic SWC
8	Zapf Humanist 601 Bold Italic SWC
9	Ribbon 131 SWC
10	Clarendon 701 Clarendon Condensed SWC
11	Swiss™ 742 SWC
12	Swiss 742 Bold SWC
13	Swiss 742 Italic SWC
14	Swiss 742 Bold Italic SWC
15	Swiss 742 Condensed SWC
16	Swiss 742 Condensed Bold SWC
17	Swiss 742 Condensed Italic SWC
18	Swiss 742 Condensed Bold Italic SWC
19	Incised 901 SWC
20	Incised 901 Bold SWC
21	Incised 901 Italic SWC
22	Aldine 430 Original Garamond SWC
23	Aldine 430 Original Garamond Bold SWC
24	Aldine 430 Original Garamond Italic SWC
25	Aldine 430 Original Garamond Bold Italic SWC
26	Audrey Two SWC
27	Flareserif 821 SWC
28	Flareserif 821 Extra Bold SWC
29	Swiss 721 SWM
30	Swiss 721 Bold SWM
31	Swiss 721 Oblique SWM
32	Swiss 721 Bold Oblique SWM

Font No.	Font Name
33	Dutch 801 SWM
34	Dutch 801 Bold SWM
35	Dutch 801 Italic SWM
36	Dutch 801 Bold Italic SWM
37	Symbol SWA
38	Wingbats SWM
39	Fixed Pitch 810 Courier Bold SWC
40	Fixed Pitch 810 Courier Italic SWC
41	Fixed Pitch 810 Courier Bold Italic SWC
42	Fixed Pitch 850 Letter Gothic 12 pitch/text SWC
43	Fixed Pitch 850 Letter Gothic Bold 12 pitch/text SWC
44	Fixed Pitch 850 Letter Gothic Italic 12 pitch/text SWC
45	Line Printer

(2) For PS2*A

Font Name
Dutch 801 SWA
Dutch™ 801 Bold SWA
Dutch 801 Italic SWA
Dutch 801 Bold Italic SWA
Swiss™ 721 SWA
Swiss 721 Bold SWA
Swiss 721 Oblique SWA
Swiss 721 Bold Oblique SWA
Fixed Pitch 810 Courier® SWA
Fixed Pitch 810 Courier Bold SWA
Fixed Pitch 810 Courier Italic SWA
Fixed Pitch 810 Courier Bold Italic SWA
Symbol SWA
Century 702 Century Schoolbook SWA
Century 702 Century Schoolbook Italic SWA
Century 702 Century Schoolbook Bold SWA
Century 702 Century Schoolbook Bold Italic SWA
Revival 711 ITC Bookman SWA
Revival 711 ITC Bookman Italic SWA
Revival 711 ITC Bookman® Demi SWA
Revival 711 ITC Bookman Demi Italic SWA
Swiss 721 Narrow Bold SWA
Swiss 721 Narrow Bold Oblique SWA
Swiss 721 Narrow SWA
Swiss 721 Narrow Oblique SWA
Geometric 711 ITC Avant Garde Gothic® Book SWA
Geometric 711 ITC Avant Garde Gothic Book Oblique SWA
Geometric 711 ITC Avant Garde Gothic Demi SWA
Geometric 711 ITC Avant Garde Gothic Demi Oblique SWA
Chancery 801 ITC Zapf Chancery® Medium Italic SWA
ITC Zapf Dingbats® SWA
Zapf Calligraphic 801 SWA
Zapf Calligraphic 801 Bold SWA
Zapf Calligraphic 801 Italic SWA
Zapf Calligraphic 801 Bold Italic SWA

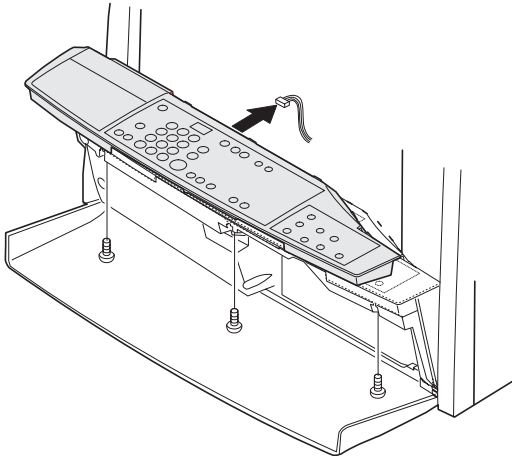
[3] SET UP

1. Procedures on the copier (operation panel)

* When installing the LCD panel kit simultaneously.

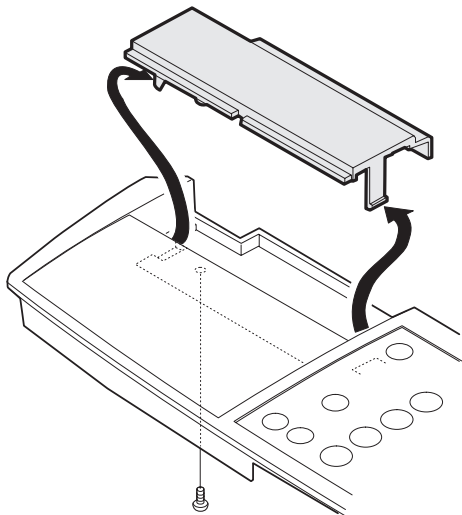
A. Copier operation panel disassembly

- Remove screws and connector, and remove the operation panel.



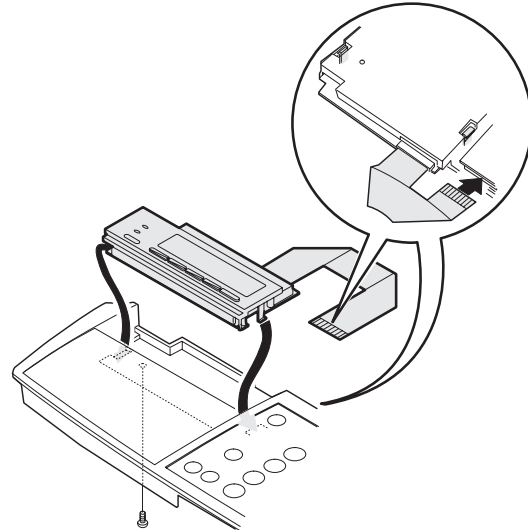
B. Cover disassembly

- Remove screw and disengage pawls, and remove the cover.



C. Printer operation panel installation

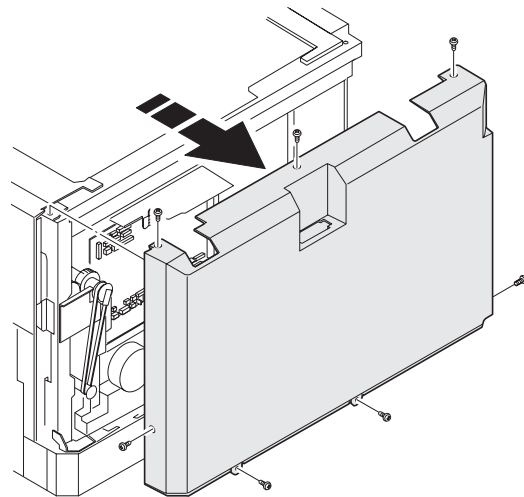
- Engage pawls and fix the printer operation panel with screw. Then connect the flat cable to the connector.



2. Procedures on the copier (rear side)

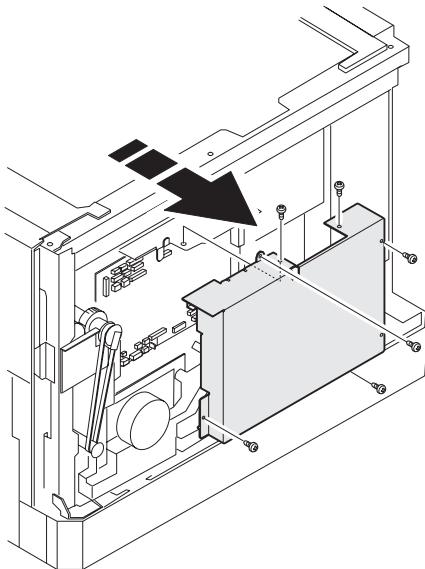
A. Copier rear cabinet disassembly

- Remove screws and remove the rear cabinet.



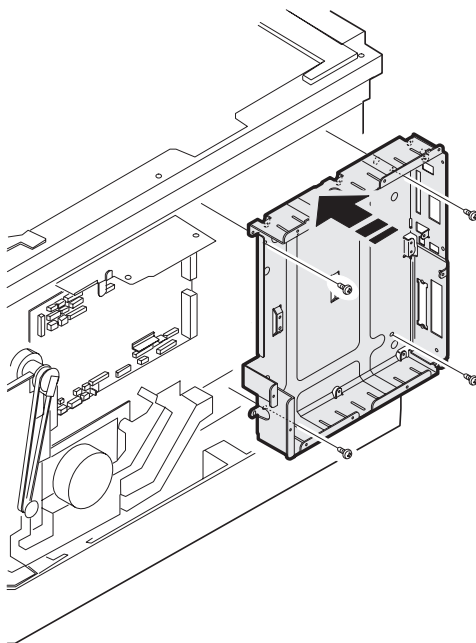
B. Copier shield plate disassembly

- Remove screws, and remove the shield plate.



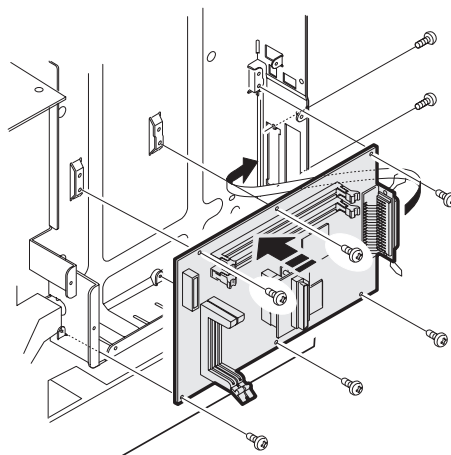
C. PWB fixing plate installation

- Fix the plate with screws.



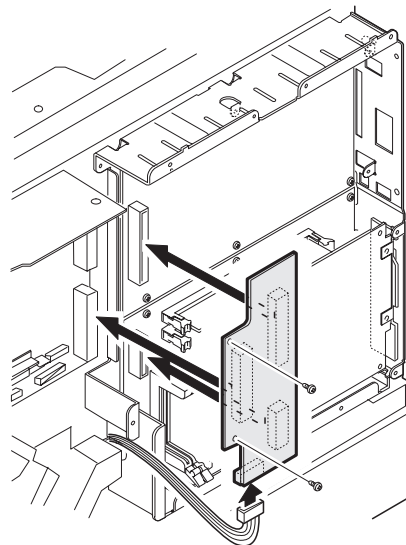
D. Printer PWB installation

- Fix the printer PWB with screws.
- Before introduction of the Expansion memory, the PS PWB, or the network PWB, this procedure must be performed.



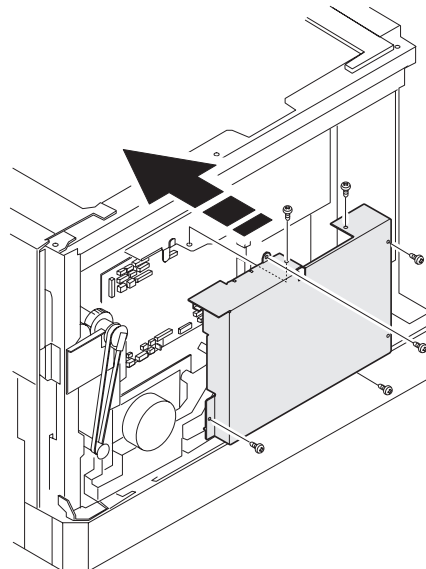
E. Mother board installation (Packed together with the LCD kit.)

- Insert the connectors and fix them, then connect the connectors of the copier to them.



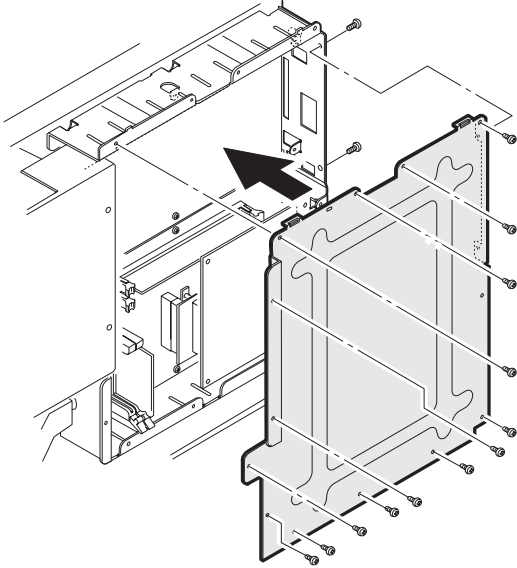
F. Shield plate installation

- Fix the shield plate with screws.



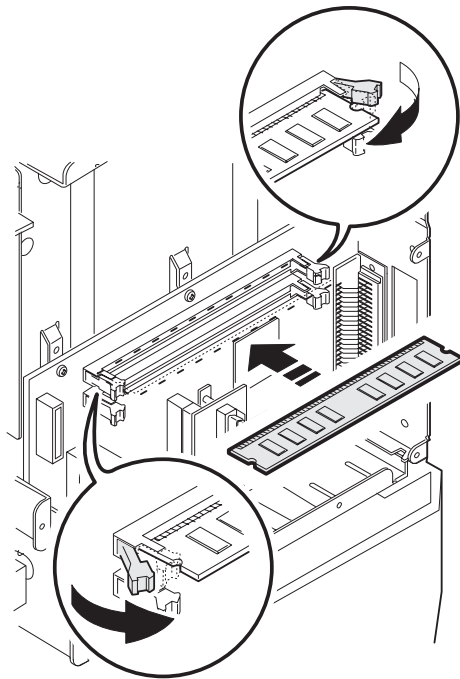
G. PWB cover installation

- Install the PWB cover with screws.



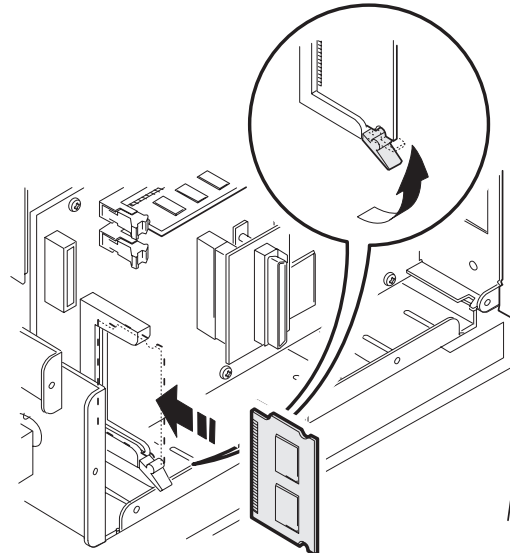
3. Expansion memory installation

- Fix the memory PWB with pawls.



4. PS kit (AR-PS1) installation

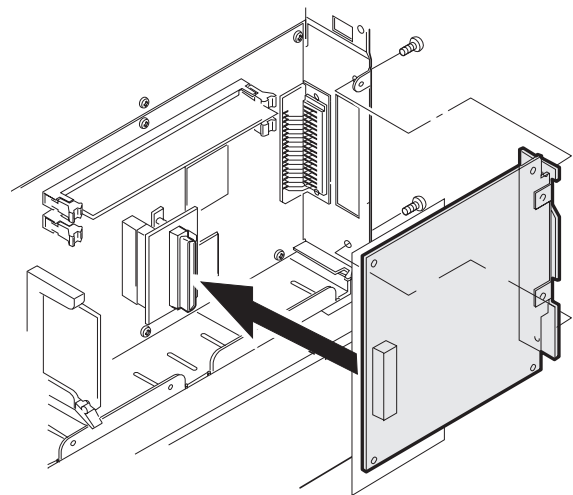
- Fix the PS PWB with pawl.



*Note: The DIMM connector and the PS-PWB are provided with the reverse insertion protection key(notch). A strong push, however, allows reverse insertion. Use great care of the inserting direction.

5. Network Interface Control PWB installation

- Insert the network PWB into the printer PWB connector and fix it with screws.



6. INSTALLING THE PRINTER DRIVER

To use this printer with your computer, you must install the printer driver.

Install the printer driver using the supplied SHARP Software CD-ROM. This kit is supplied with the following printer drivers:

- PCL6 for Windows 95/98
- PCL6 for Windows NT 4.0
- PCL5e for Windows 95/98
- PCL5e for Windows NT 4.0

Note: • It is recommended that you install the PCL6 printer driver. If you have a problem printing from older software using the PCL6 driver, remove it and install the PCL5e driver.

- The printer driver data in the CD-ROM can be copied to floppy disks.
 1. Double-click "My Computer", "Ar160_200" and "Makedisk".
 2. Double-click "Makedisk.exe".
 3. Follow the on-screen instructions.

Before installation, make sure that:

- You read the README.TXT file which is contained on the SHARP Software CD-ROM. This file contains the information and restrictions for using the printer.
- The printer is connected properly with the computer or network.
- The printer is loaded with paper.
- The printer is turned on and on-line (the ON LINE light is lit).
- You quit all application software that is running on your computer.
- Your computer meets the following hardware and software requirements:

Computer Type	IBM PC/AT or compatible computer equipped with a bi-directional parallel interface and CD-ROM drive	
Operating System	Windows 95, Windows 98, Windows NT 4.0	
CPU	Windows 95:	486SX or better
	Windows 98:	486DX/66MHz or better (Pentium or better is recommended.)
RAM	Windows NT 4.0:	486/25MHz or better
	Windows 95:	8MB or more (12MB or more is recommended.)
	Windows 98:	16MB or more (32MB or more is recommended.)
	Windows NT 4.0:	16MB or more

This procedure uses the following drive name in examples:

Drive R: CD-ROM drive (holds the CD-ROM containing the printer drivers)

Change the drive name as required according to your environment.

A. Installing onto Windows 95

This printer is compatible with plug & play. If your computer is incompatible with plug & play or if you want to use this printer as a network printer, refer to "Installing onto Windows 95/98 without Using the Plug & Play Function".

- 1) Turn the computer on and start Windows 95.

Note: Depending on which version of Windows you are using, the display examples in this step may differ from those on your system.

- Either the "Update Device Driver Wizard" window or the "New Hardware Found" window may appear automatically.

Note: If neither the "Update Device Driver Wizard" window nor the "New Hardware Found" window appear, refer to "Installing Windows 95/98 without Using the Plug & Play Function".

- If the "Update Device Driver Wizard" window appears, click the [Next] button and proceed to step 2).



- If the "New Hardware Found" window appears, perform the following steps:

- <1> Choose "Driver from disk provided by hardware manufacturer" and click the [OK] button.
- <2> When the "Install From Disk" window appears, insert the SHARP Software CD-ROM into the CD-ROM drive, type R:\English\WinXX and click the [OK] button.
- <3> Choose the appropriate printer driver from those listed below and click the [OK] button.

- PCL6 Printer Driver: SHARP AR-160/200 Series PCL6
- PCL5e Printer Driver: SHARP AR-160/200 Series PCL5e

Note: It is recommended that you install the PCL6 printer driver. If you have a problem printing from older software using the PCL6 driver, remove it and install the PCL5e driver.

- <4> Proceed to step 5).

- 2) Search for the printer driver by clicking [Other Locations...] button.
- 3) Insert the SHARP Software CD-ROM into the CD-ROM drive, type R:\English\WinXX and click the [OK] button.
- 4) After Windows finds the printer driver, click the [Finish] button to continue the installation.

Note: In this step the PCL6 printer driver is installed automatically. If you want to install the PCL5e printer driver, refer to "Installing onto Windows 95/98 without Using the Plug & Play Function".

- 5) Set the printer name.
 - <1> If you want to change the printer name, enter a new name in the space provided.
 - <2> If the program displays, "Do you want your Windows-based programs to use this printer as the default printer?", check "Yes".
 - <3> Click the [Next] button.



- 6) Print a test page by clicking the [Finish] button.

Note: If you check "No" and click the [Finish] button, the printer does not print a test page after the installation.

- The printer driver installation begins.



- If the "Insert Disk" window appears, perform the following steps:

<1> Click the [OK] button.

<2> When the "Copying Files" window appears, type R:\English\WinXX and click the [OK] button.

- 7) When the test page is printed properly, click the [Yes] button.

- The printer is ready for printing.

B. Installing onto Windows 98

This printer is compatible with plug & play. If your computer is incompatible with plug & play or if you want to use this printer as a network printer, refer to "Installing onto Windows 95/98 without Using the Plug & Play Function".

- 1) Turn the computer on and start Windows 98.

- The "Add New Hardware Wizard" window appears automatically, click the [Next] button.

Note: If the "Add New Hardware Wizard" window does not appear in this step, refer to "Installing onto Windows 95/98 without Using the Plug& Play Function".



- 2) Display a list of all the printer drivers by checking "Display a list of all the drivers in a specific location, ..." and clicking the [Next] button.



- 3) Click the [Have Disk...] button.



- 4) Insert the SHARP Software CD-ROM into the CD-ROM drive, type R:\English\WinXX, and click the [OK] button.



- 5) Choose the appropriate printer driver from those listed below and click the [Next] button.

- PCL6 Printer Driver: SHARP AR-160/200 Series PCL6
- PCL5e Printer Driver: SHARP AR-160/200 Series PCL5e

Note: It is recommended that you install the PCL6 printer driver. If you have a problem printing from older software using the PCL6 driver, remove it and install the PCL5e driver.



- 6) After Windows finds the printer driver, click the [Next] button to continue the installation.

- 7) Print a test page by clicking the [Finish] button.

Note: If you check "No" and click the [Finish] button, the printer does not print a test page after the installation.

- The printer driver installation begins.



- 8) When the test page is printed properly, click the [Yes] button.

- The printer is ready for printing.

C. Installing onto Windows 95/98 without Using the Plug & Play Function

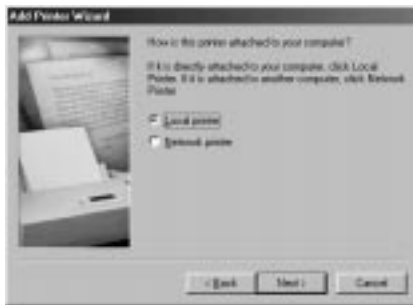
Computers using Windows 95 or Windows 98 that are compatible with plug & play can install the printer driver automatically. However, if your computer is incompatible with plug & play, or if you want to use this printer as a network printer, follow the procedure in this section.

The following steps use Windows 98 in display examples.

- 1) Turn the computer on and start Windows 95/98.
- 2) Click the Start menu, point to "Settings", and choose "Printers".
- 3) When the "Printers" window appears, double-click the "Add Printer" icon.
- 4) Click the [Next] button.
- 5) If the screen for choosing the connection method appears, choose the connection method and click the [Next] button.

Note: This screen appears only when the computer is connected to a network.

- When the printer is directly connected to the computer, choose "Local printer".
Otherwise, choose "Network printer".
If you choose "Network printer" you must specify a network path or queue name.
Contact your network administrator for details.
The following steps use the example of a local printer.



- 6) Click the [Have Disk...] button.



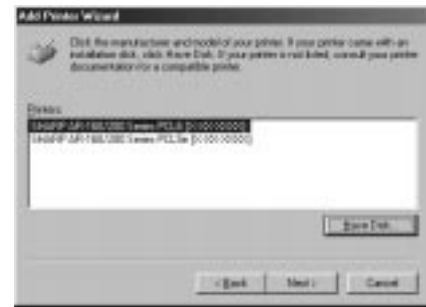
- 7) Insert the SHARP Software CD-ROM into the CD-ROM drive, type R:\English\WinXX, and click the [OK] button.



- 8) Choose the appropriate printer driver from those listed below and click the [Next] button.

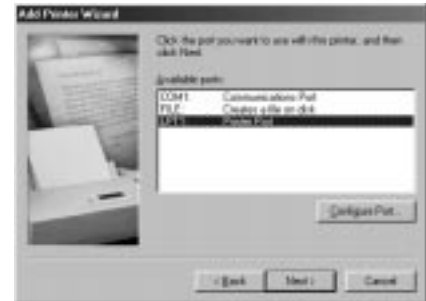
- PCL6 Printer Driver: SHARP AR-160/200 Series PCL6
- PCL5e Printer Driver: SHARP AR-160/200 Series PCL5e

Note: It is recommended that you install the PCL6 printer driver. If you have a problem printing from older software using the PCL6 driver, remove it and install the PCL5e driver.



- 9) Choose the port and click the [Next] button.

Note: This screen appears only if you selected "Network printer" in step 5).



- 10) Set the printer name.

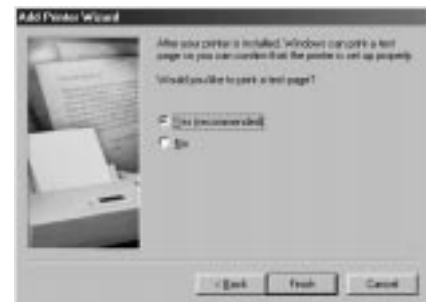
- <1> If you want to change the printer name, enter a new name in the space provided.
- <2> If the program displays, "Do you want your Windows-based programs to use this printer as the default printer?", check "Yes".
- <3> Click the [Next] button.



- 11) Print a test page by clicking the [Finish] button.

Note: If you check "No" and click the [Finish] button, the printer does not print a test page after the installation.

- The printer driver installation begins.



- 12) When the test page is printed properly, click the [Yes] button.

- The printer is ready for printing.

D. Installing onto Windows NT 4.0

- 1) Turn the computer on and start Windows NT.
- 2) Click the Start menu, point to "Settings", and choose "Printers".
- 3) When the "Printers" window appears, double-click the "Add Printer" icon.
- 4) Choose "My Computer" or "Network printer server" and click the [Next] button.
 - The following steps use "My Computer" as an example.
 For more information about using this printer as a network printer, refer to the Windows NT 4.0 networking documentation.



- 5) Check the checkbox for the port you are using and click the [Next] button.



- 6) Click the [Have Disk...] button.



- 7) Insert the SHARP Software CD-ROM into the CD-ROM drive, type R:\English\WinNT and click the [OK] button.



- 8) Choose the appropriate printer driver from those listed below and click the [Next] button.
 - PCL6 Printer Driver: SHARP AR-160/200 Series PCL6
 - PCL5e Printer Driver: SHARP AR-160/200 Series PCL5e

Note: It is recommended that you install the PCL6 printer driver. If you have a problem printing from older software using the PCL6 driver, remove it and install the PCL5e driver.



- 9) Set the printer name.
 - <1> If you want to change the printer name, enter a new name in the space provided.
 - <2> If the program displays, "Do you want your Windows-based programs to use this printer as the default printer?", check "Yes".
 - <3> Click the [Next] button.



- 10) Make the appropriate settings for your environment.

- When using print sharing, choose "Shared" and enter a share name. If necessary for your environment, select Windows 95 from the list of operating systems.
- If you are not using shared printing, choose "Not shared".



After making the settings on this screen, click the [Next] button.

- 11) Print a test page by clicking the [Finish] button.

Note: If you check "No" and click the [Finish] button, the printer does not print a test page after the installation.

- The printer driver installation begins.



- 12) When the test page is printed properly, click the [Yes] button.

- The printer is ready for printing.

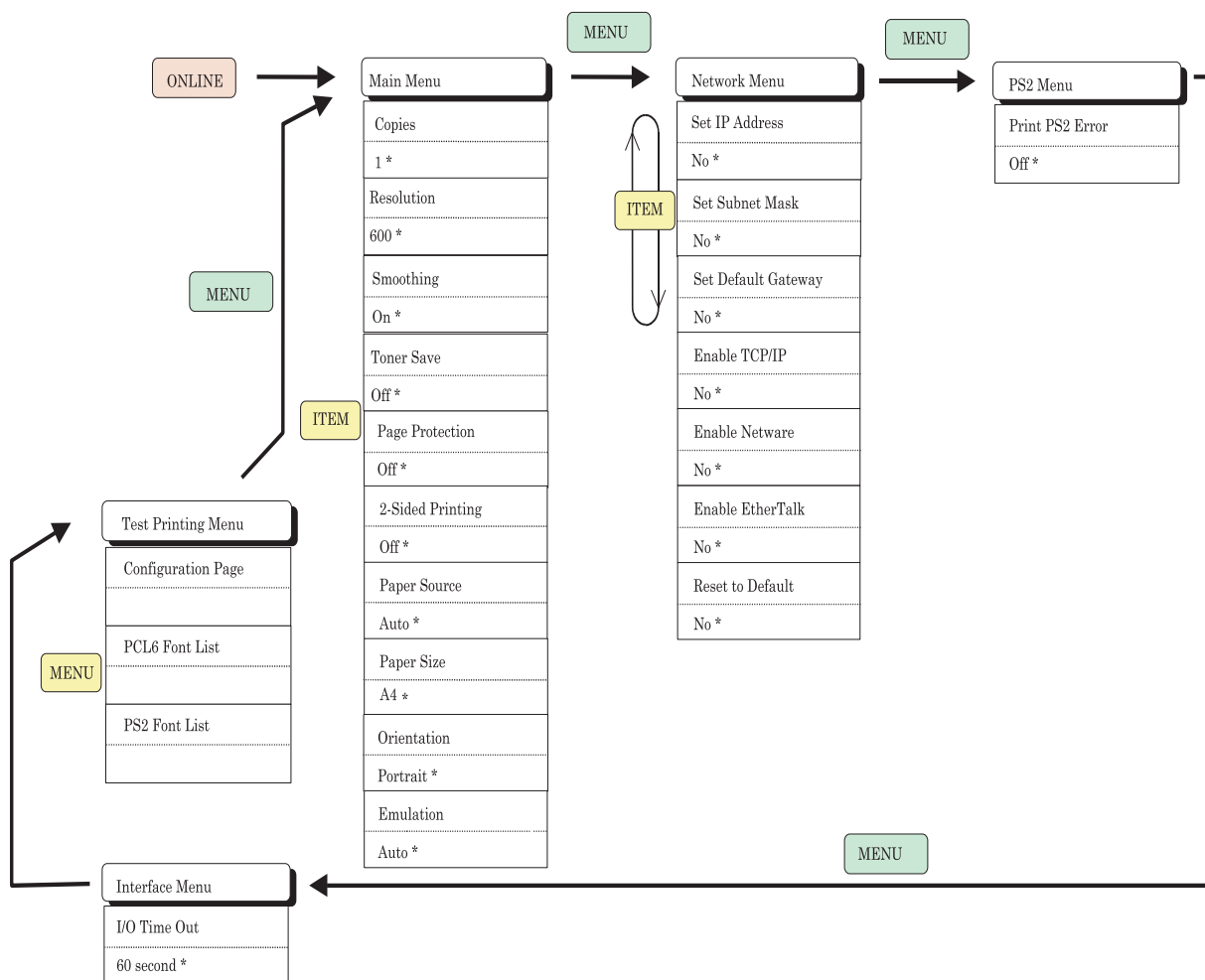
E. Changing Printer Configuration Settings

After installing the printer driver use the procedure in this section to change the printer configuration settings. Also refer to the print driver help for more information.

1. Click the Start menu, point to "Settings", and choose "Printers".
2. Right-click the appropriate printer and choose "Properties" from the menu.
3. Click the Configuration tab and change the printer settings.

[4] SETTING AND ADJUSTMENTS

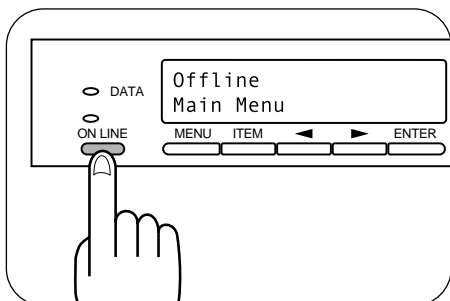
1. Configuration setting



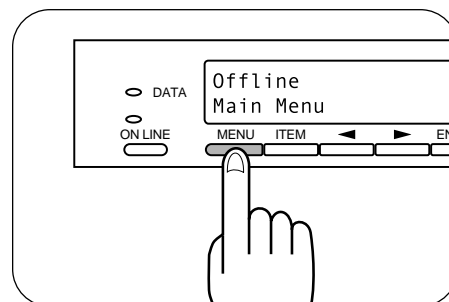
(Basic Menu Setting Procedure)

Note: The menus and items displayed may be different depending on the optional functions installed.

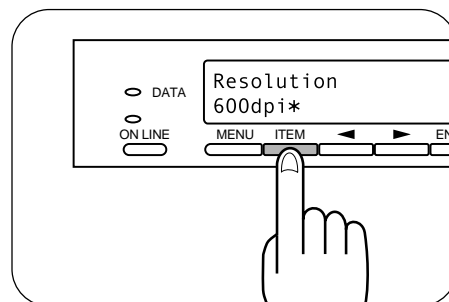
- 1) When the printer is not in use, press the ON LINE key to put the printer off-line.



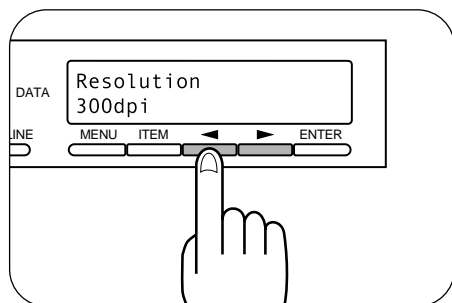
- 2) Press the MENU key repeatedly until the required menu appears.



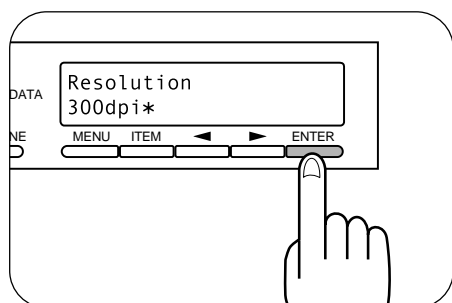
- 3) Press the ITEM key repeatedly until the required item appears.



- 4) Press the Left or Right arrow key to change the setting.
- The current value is marked with an asterisk (*).



- 5) After choosing the required value, press the ENTER key.
- The new value is registered.



A. Main Menu

Item	Possible Settings	Description
Copies	1 ~ 999	Sets how many copies to print.
Resolution	600dpi 300dpi	Sets the printing resolution.
Smoothing	On Off	Sets whether smoothing is done or not. This function improves the appearance of printed documents by smoothing the angles and curves of images. This allows printing at a higher apparent resolution. For example, if the printer is set to 600dpi, resolution equivalent to 1200dpi can be achieved. When printing image data, you may need to select "Off" to achieve best results.
Toner Save	On Off	Sets whether toner save mode is in effect or not. This function prints slightly fainter to save toner. This item is different from the copier "toner save mode".
Page Protection	On Off	Sets page protection. Page protection is a function designed to prevent data loss errors when complex data is printed. This menu item is displayed only if the installed printer memory is 24MB or more.
2-Sided Printing *B	On Off	Setting of duplex function and binding direction.
Paper Source	Auto Tray 1 Tray 2* Tray 3* Tray 4* Bypass Tray	Sets the tray used for paper feeding. Setting to "Auto" automatically selects the paper tray loaded with the paper of the size specified in the "Paper Size" item. * The available settings reflect the installed trays.

Item	Possible Settings	Description
Paper Size	A3 B4 A4* B5 A5 Ledger Legal Letter* Executive Folio Invoice Foolscap COM-10 DL C5	Sets the size of the paper where data will be printed. If this size is different from the paper size present in the tray, the size set on the operation panel takes precedence. * Depending on where the printer was purchased, the default value is either A4 or Letter.
Orientation	Portrait Landscape	Sets the page orientation for printing. Specify "Portrait" to print the paper with its long side (longer edge) vertical. Specify "Landscape" to print the paper with its long side (longer edge) horizontal.
Emulation	Auto PCL HEX	Specifies the printer language used.

B. Network Menu

Item	Setting Choice	Description
Set IP Address	Yes No	Sets the IP address.
Set Subnet Mask	Yes No	Sets the subnet mask.
Set Default Gateway	Yes No	Sets the default gateway.
Enable TCP/IP	YES NO	Enable/Disable TCP/IP
Enable Netware	YES NO	Enable/Disable Netware
Enable EtherTalk	YES NO	Enable/Disable EtherTalk
Reset to Defaults	YES NO	Reset Print Server Card to default.

* Displayed only if the optional Network Interface Control card is installed.

C. Interface Menu

Item	Setting Choice	Description
I/O Time Out	1 second : 60 second : 999 second	Sets I/O time-out. If no data is received within the preset time, print processing is ended.

D. Test Menu

Item	Description
Configuration Page	Prints the configuration page.
PCL6 Font List	Prints the PCL6 font list.
PS2 Font List*1, *A	Prints the PS2 font list.

* 1 Displayed only when the PS Kit (AR-PS1) is installed.

E. PS2 Menu *A

Item	Description
Print PS2 Error	When set to "On", PS error print is made.

* Displayed only when the PS Kit (AR-PS1) is installed.

[5] SIMULATION

1. Entering the simulation mode

Perform the following procedure to enter the simulation mode.

Clear key → Interruption key → "0" key → Interruption key → Main code → Start key → Sub code → Start key

2. Cancelling the simulation mode

When the all clear key is pressed, the simulation mode is cancelled.

When the interruption key is pressed, the process is interrupted and the screen returns to the sub code entering display.

3. Contents of Simulations

Main code	Sub code	Contents	Details of operation	Initial value	Set range
22	18	Printer counter display	Used to display the current printer counter value. *1		
24	9	Printer counter clear	Used to clear the printer counter. *2		
67	14	Printer Flash ROM	The machine enters the version up mode of the printer PWB flash ROM.		
		Data Download	For details, refer to the printer PWB flash ROM version up procedure described later.		

*1: Each counter display method

To display 123456: 123 (0.75 sec) → Blank (0.35sec) → 456 (0.75 sec) → Blank (1.0 sec) → repetition

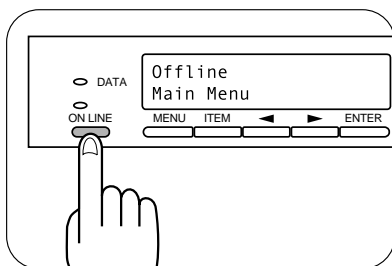
*2: Display after clearing each counter

000 (0.75 sec) → Blank (0.35sec) → 000 (0.75 sec) → Blank (1.0 sec) → Repetition

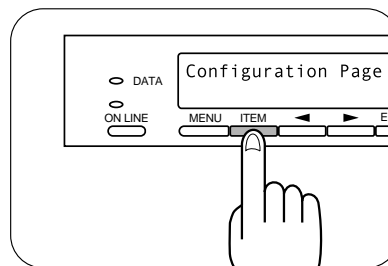
[6] CONFIGURATION REPORT AND TEST PAGE

To test print the configuration page and font list, use the following procedure:

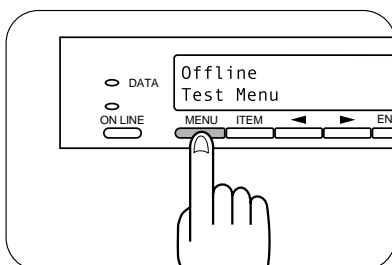
1) Press the ON LINE key to switch the printer to the offline mode.



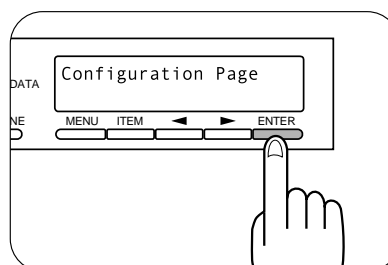
3) Press the ITEM key to display the required item.



2) Press the MENU key to display the Test Menu.



4) Press the ENTER key.
The test page prints.



1. Samples

SHARP

Printer Configuration Page

HARDWARE STATUS			
Machine Information			
Language:		English	
Hardware Specs			
Base Memory:		8MB	
Total Memory:		8MB	
Network Board:		Not Installed	
Version Information			
PCL6:		1.00	
Input Paper Trays			
Bypass Tray:		-Size- Paper Inserted	
Tray 1:		Letter (8.5x11)	
Tray 2:		Letter (8.5x11R)	
Tray 3:		Legal (8.5x14)	
Tray 4:		Ledger (11x17)	
KEY MENU STATUS			
Main Menu		Interface Menu	
Copies:	1	I/O Time Out	60 sec.
Resolution:	600dpi		
Smoothing:	On		
Toner Save:	Off		
Paper Source:	Auto		
Paper Size:	Letter (8.5x11)		
Orientation:	Portrait		
Emulation:	PCL		

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2. Items and contents

A. Hardware status

(Machine information)

a. Language

Value: (English/French/German/Italian/Dutch/Spanish/Swedish)

Example: English

Default: Depends on the Destination setting

Description: Depends on the LCD display, the configuration page, and the font list language.

(Hardware specifications)

a. Base memory

Value: 8MB

Example: 8MB

Default: 8MB

Description: Indicates the printer PWB base memory capacity.

b. Total memory

Value: (8, 24, 40, 56, 72, 88, 104, 136MB)

Example: 8MB

Default: 8MB

Description: Indicates the printer PWB total memory capacity, which is the total of the base memory and the option memory.

c. Network board

Value:

Example: Not Installed.

Default: Not Installed.

Description: Indicates the network board installation status.

(Firmware version)

a. PCL6

Value: #.##

Example: 1.00

Default: Depends on the printer firmware version.

Available Paper Size

Appearance on Configuration Page	Description
Letter (8 1/2 × 11)	Letter/Long Edge Feed
Letter (8 1/2 × 11R)	Letter/Short Edge Feed
Legal (8 1/2 × 14)	Legal/Short Edge Feed
Ledger (11 × 17)	Ledger/Short Edge Feed
Executive (7 1/4 × 10 1/2)	Executive/Short Edge Feed
Invoice (5 1/2 × 8 1/2)	Invoice/Long Edge Feed
Foolscap (8 1/2 × 13)	Foolscap/Short Edge Feed
A4	A4/Long Edge Feed
A4R	A4/Short Edge Feed
B5	B5/Long Edge Feed
B5R	B5/Short Edge Feed
B4	B4/Short Edge Feed
A3	A3/Short Edge Feed
A5	A5/Long Edge Feed
A6	A6/Short Edge Feed
(Unknown)	Other size (EXTRA)
(No Paper)	No paper available on this tray.
(No Tray)	There is a problem with this tray.
(Tray Open)	This tray is opened (except Bypass-Tray) or Tray is lifting up.

a. Manual paper feed tray

Value: (Suitable paper size)

Example: Letter (8 1/2 × 11")

Default: Depends on the size of paper set on the manual paper feed tray.

Description: Indicates the size of paper set on the manual paper feed tray. Depends on the paper size detected on the manual paper feed tray. "Unclear" means that the paper size is not detected. If there is no paper, no print is made here.

b. Tray1, tray 2, tray 3, tray 4

Value: (Suitable paper size)

Example: Letter (8 1/2 × 11")

Default: Depends on the paper tray configuration.

Description: Indicates the paper size configuration of tray 1, tray 2, tray 3, tray 4.

[7] FIRMWARE VERSION UP

1. Cases where flash memory rewriting is required

In the following cases, the program in the printer control PWB flash memory must be rewritten.

- 1) When a bug or other error is found
- 2) Data stored in the flash memory is destroyed or deleted.
- 3) When the flash memory is replaced.

2. Necessary tools

- 1) Computer (PC) <Operates on MS-DOS.>
- 2) Parallel cable
- 3) Program data file (xxx.BIN)

3. Procedure

- 1) Print the configuration list to check the firmware version.
Use the operation panel of the copier to perform the following procedure.
ONLINE <off line> → MENU <Test Printing Menu> → ITEM <Configuration Page> → ENTER <The test page prints>
 - 2) Connect the PC and the copier with the parallel cable.
 - 3) Turn on the power
 - 4) Execute SIM 67-14.
"Erase Flash Data?" is displayed on the LCD.
 - 5) Press the ENTER key on the copier's operation panel.
"Now Erasing" is displayed on the LCD.
 - 6) After deletion of data, "Please Send Data" is displayed on the LCD and the machine enters the ready state for data input.
 - 7) Download the program file.
- (Note) Never turn off the power during download.
Set the PC to DOS mode → Check that the display shows READY. → Then type COPY_ /B_ xxx.BIN LPT1:
and press the enter key.
(_ : space)
- 8) The machine enters the data reception mode.
While "Writing" is displayed on the LCD, data are written into the flash ROM.
 - 9) When data reception and data writing into the flash ROM are completed, the SUM check is automatically performed.
- (Note) In case of an error, "Sum check Error" is displayed.
Turn off the power once, and repeat the procedures from 3).
- 10) If there is no problem on the result of the SUM check, "Complete" is displayed on the LCD.
 - 11) Turn off/on the power to print the configuration page with the above procedures, and check the firmware version.
 - 12) Perform printing on the PC side and check that printing is performed normally.

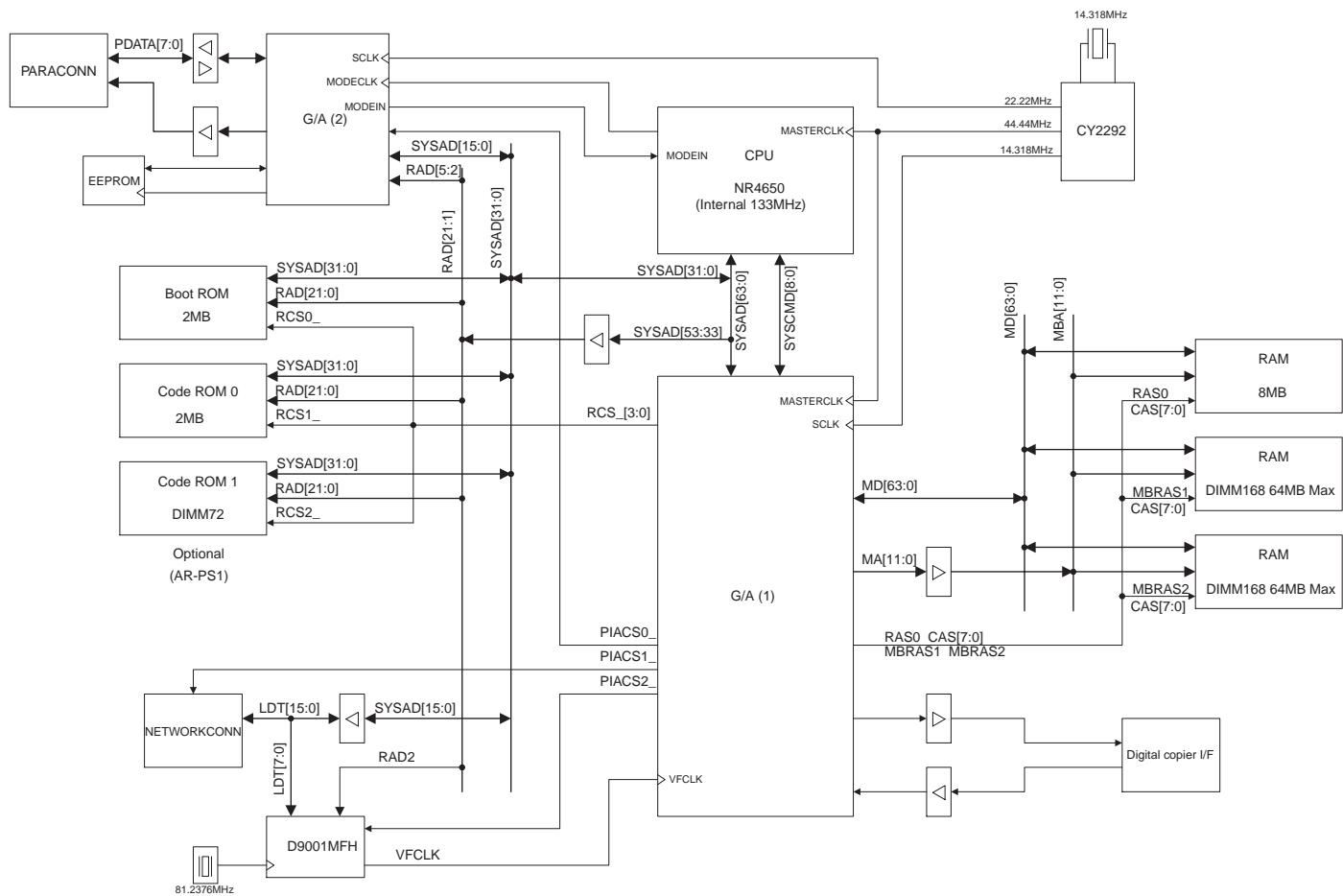
[8] TROUBLE CODE LIST

Main code	Sub code		Detail of trouble
F9	00	Content	F9-*** Communication trouble between MCU and PRT.
		Detail	Communication setup error, framing, parity, protocol error
		Cause	Printer PWB connector disconnection Printer unit PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.
	10	Content	Printer PWB trouble
		Detail	Communication trouble between MCU and PRT
		Cause	Printer PWB connector disconnection Printer unit PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.
	80	Content	Printer PWB communication trouble (protocol)
		Detail	Communication trouble between MCU and printer PWB (Protocol error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.
	81	Content	Printer PWB communication trouble (Parity)
		Detail	Communication trouble between MCU and printer PWB (Parity error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the printer PWB.

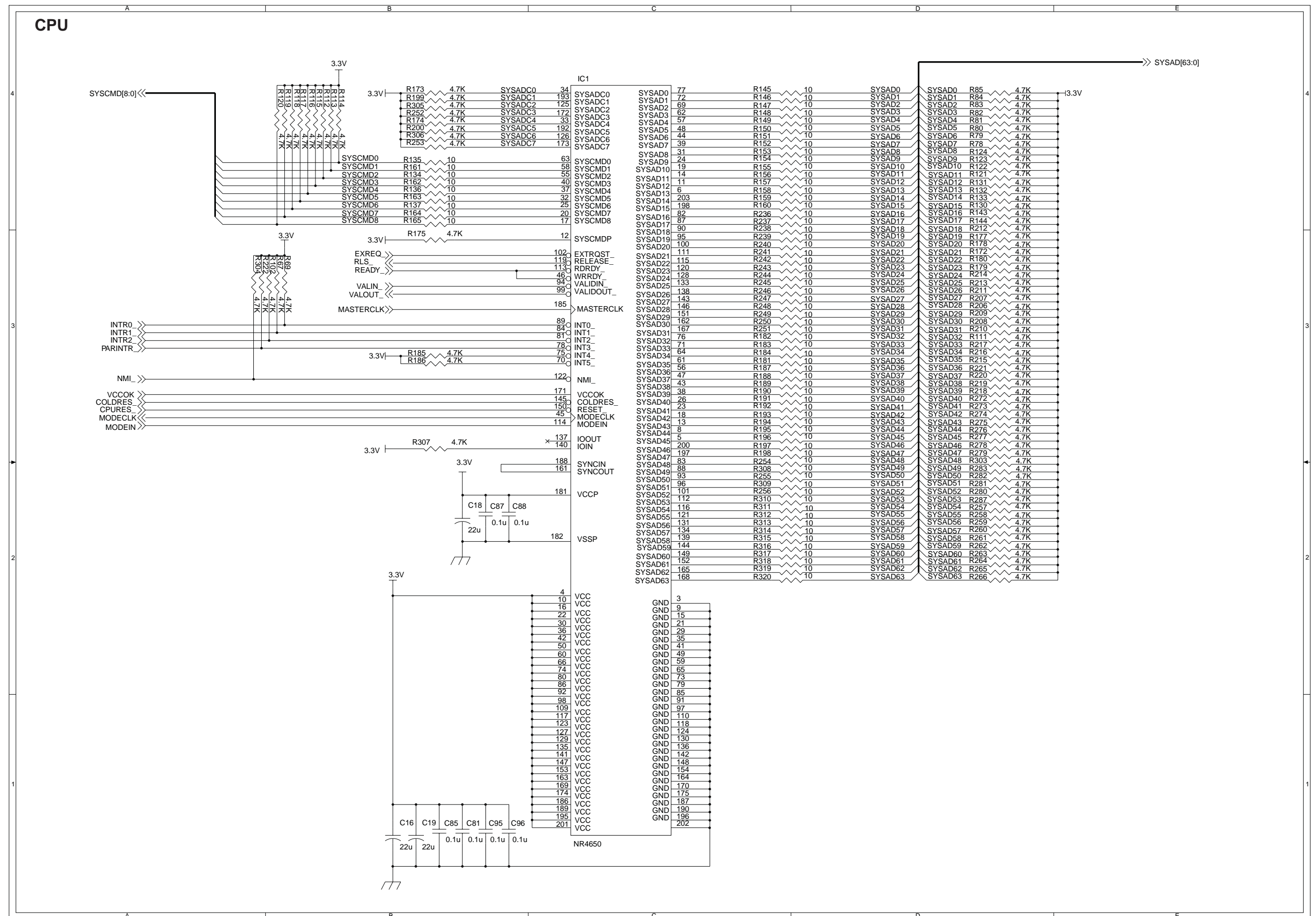
Main code	Sub code		Detail of trouble
F9	82	Content	Printer PWB communication trouble (Overrun)
		Detail	Communication trouble between MCU and printer PWB (Overrun error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the Printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the Printer PWB.
	84	Content	Printer PWB communication trouble (Framing)
		Detail	Communication trouble between MCU and printer PWB (Framing error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the Printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the Printer PWB.
	88	Content	Printer PWB communication trouble (Time-out)
		Detail	Communication trouble between MCU and printer PWB (Time-out error)
		Cause	Printer PWB connector disconnection Printer PWB MCU PWB harness failure Printer PWB mother board connector pin breakage. Printer PWB ROM defect, data failure
		Check and remedy	Check the connectors and harness of the Printer PWB and the MCU PWB. Check grounding of the machine. Check the ROM of the Printer PWB.

[9] CIRCUIT DIAGRAM

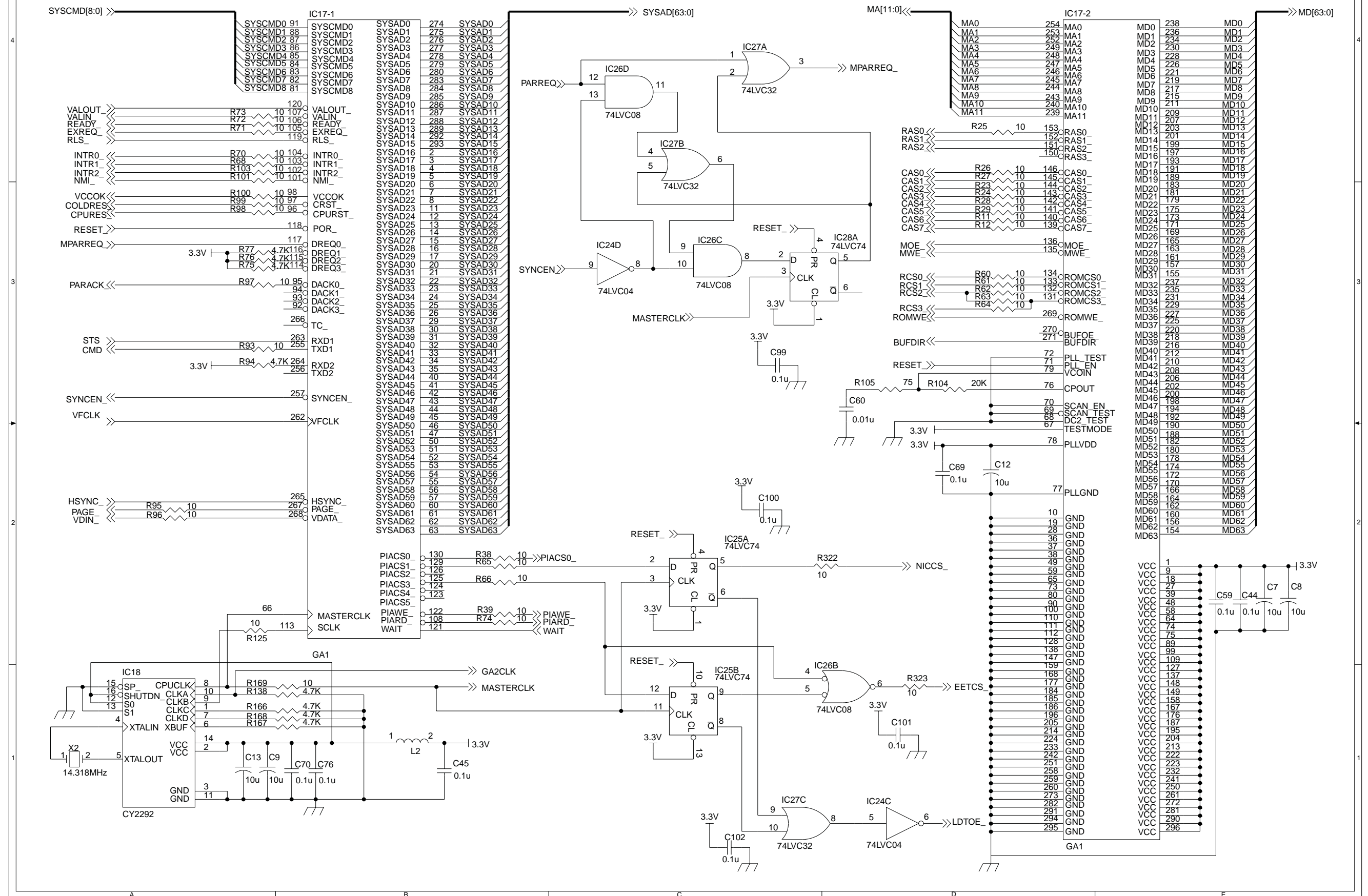
1. BLOCK DIAGRAM



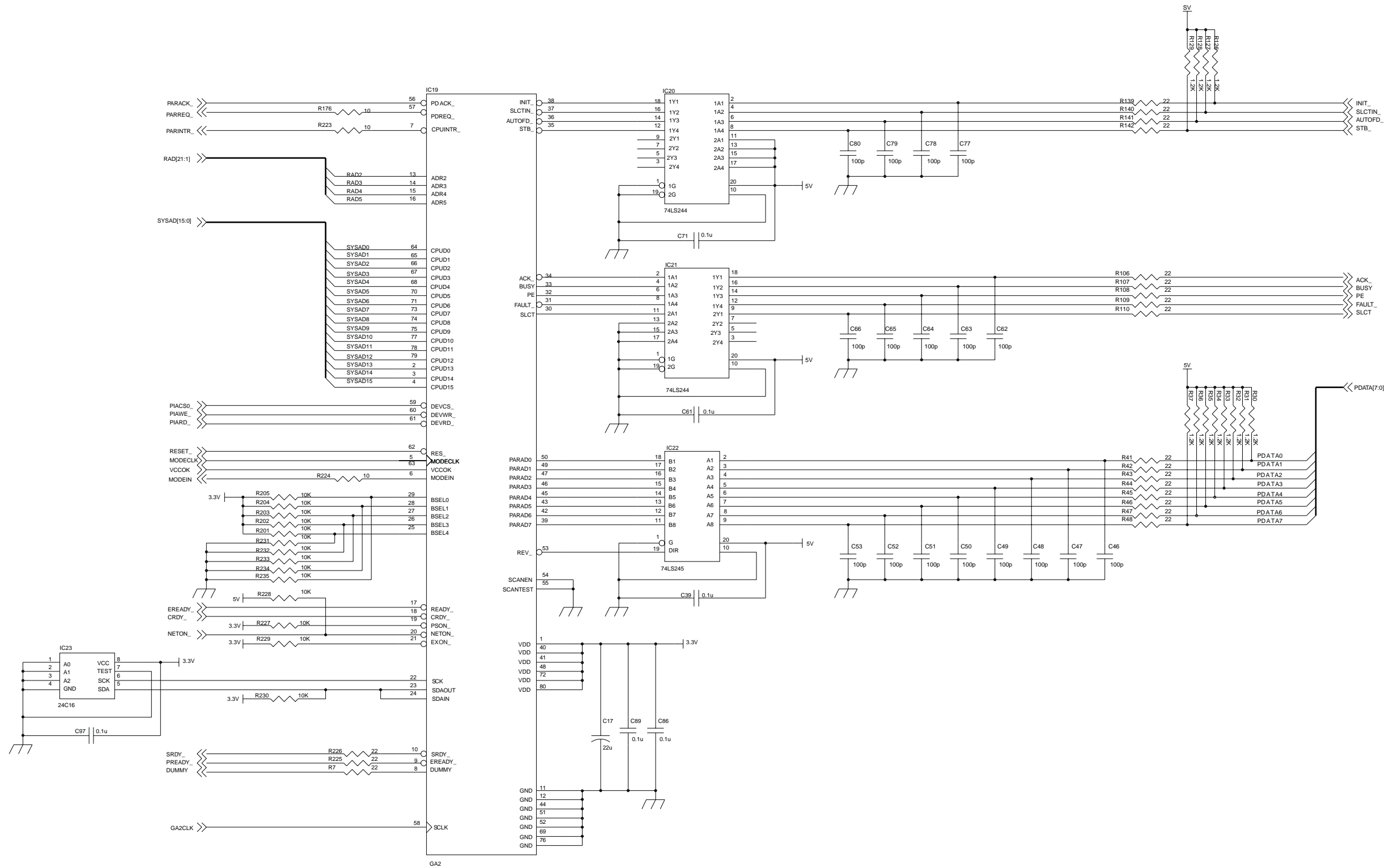
2. CIRCUIT DIAGRAM

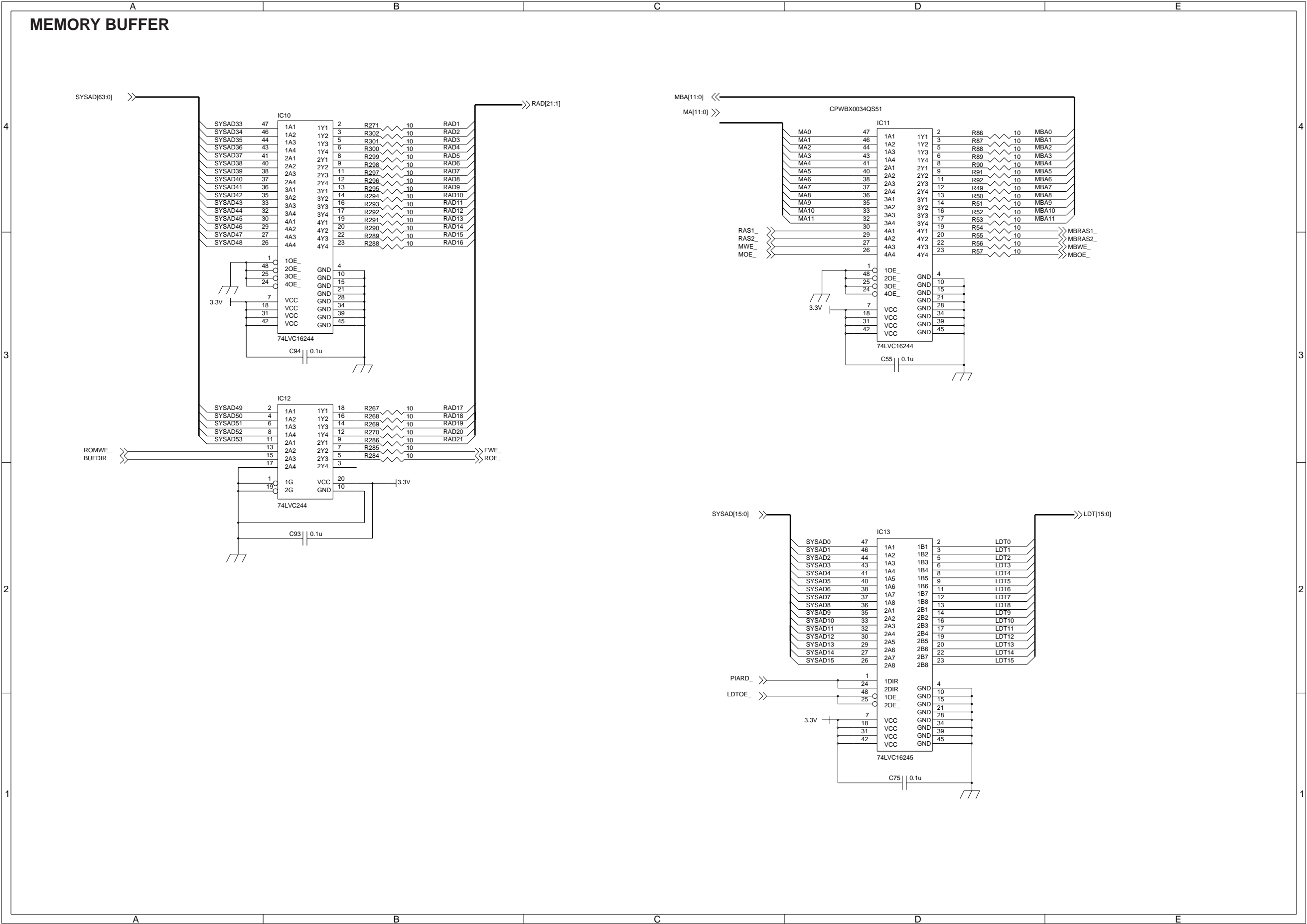


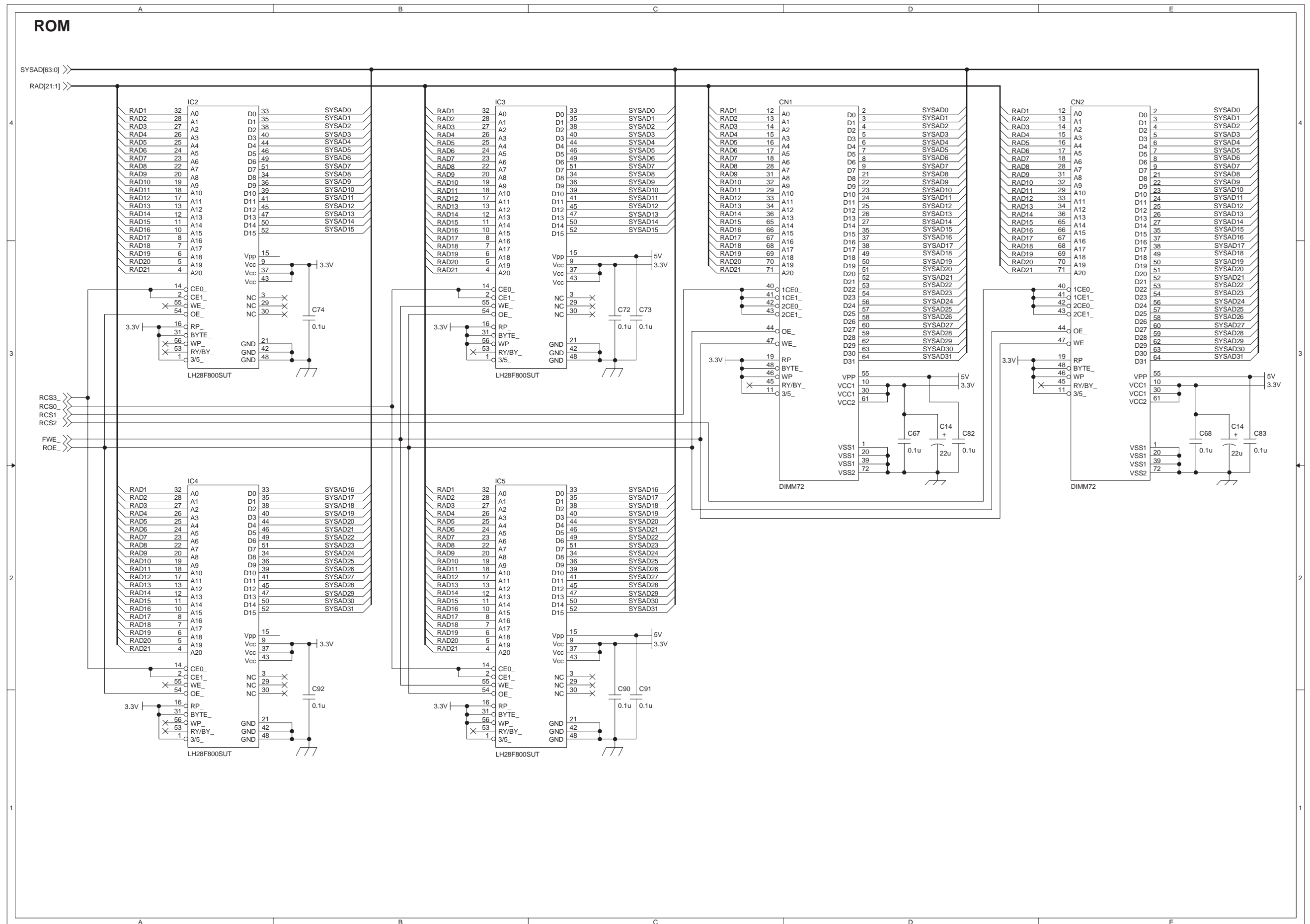
ASIC 1

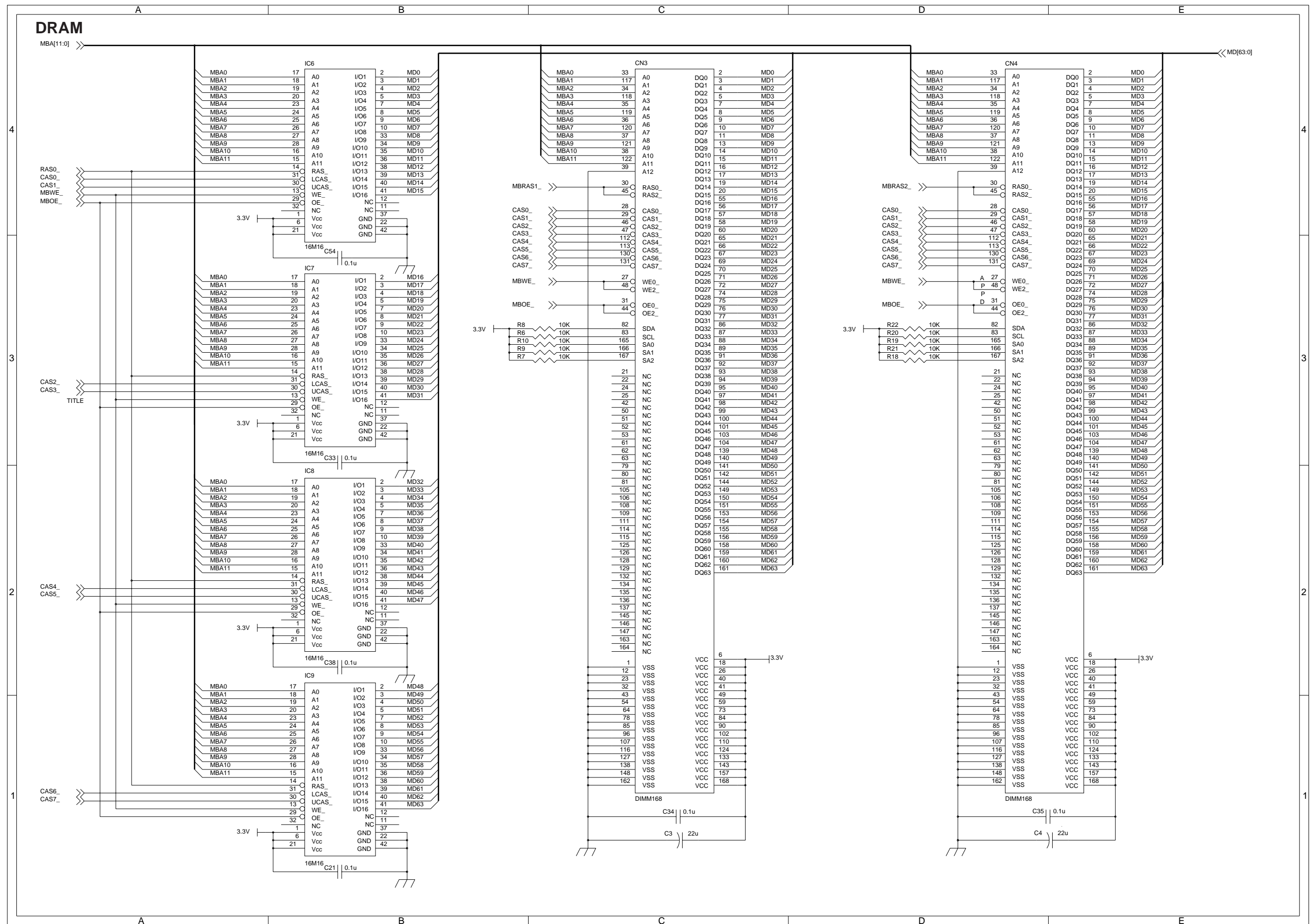


ASIC 2

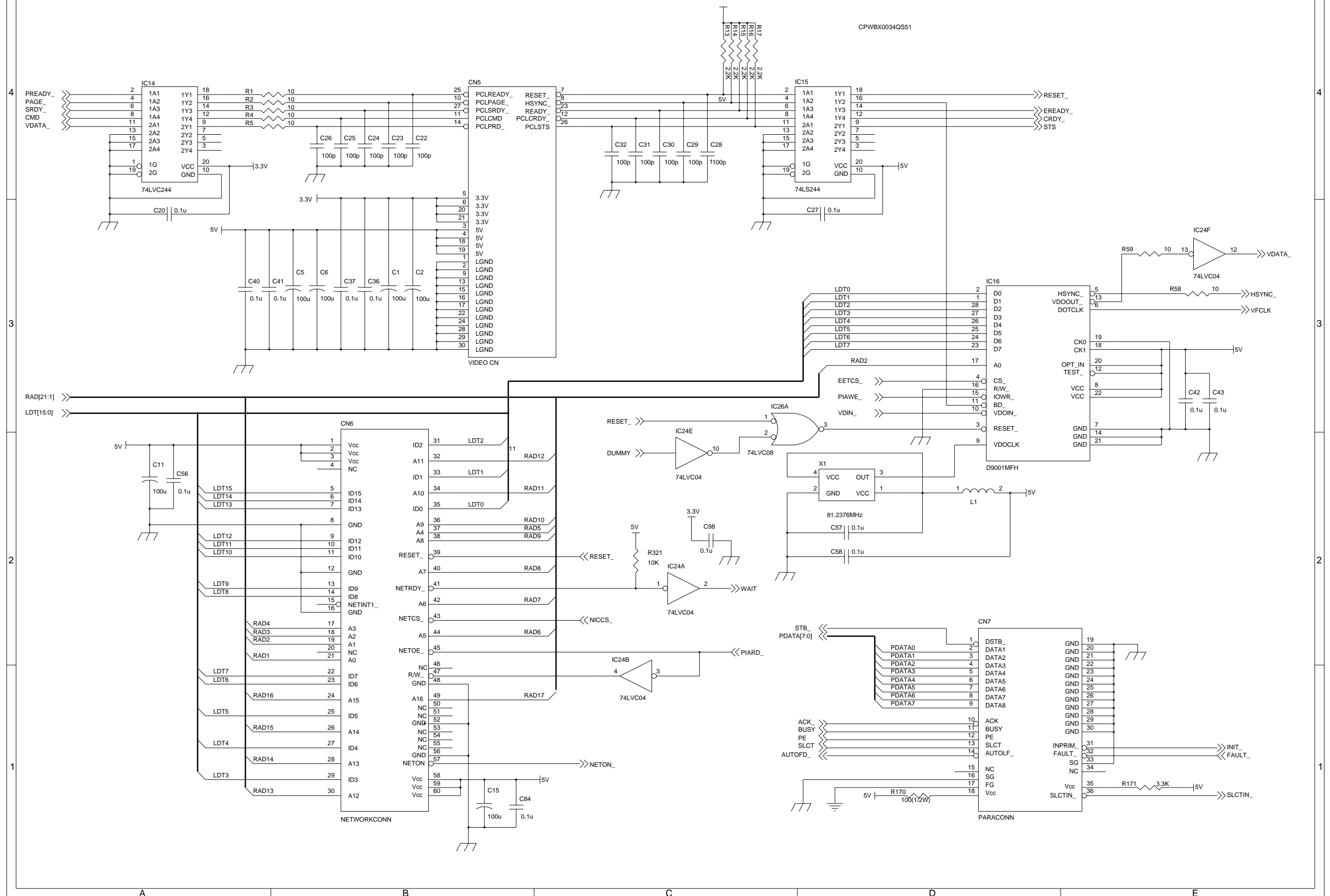








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